

CALIFORNIA ENERGY COMMISSION1516 NINTH STREET
SACRAMENTO, CA 95814-5512

July 22, 2004

PROGRAM OPPORTUNITY NOTICE**EXPANDED WIND REGIME TURBINE TECHNOLOGY AND
INTERMITTENCY MANAGEMENT CAPABILITY
DEMONSTRATION**PRE-PROPOSAL MEETING WITH
THE PIER RESEARCH & DEVELOPMENT WIND ENERGY RESOURCE TEAM**UP TO \$5 MILLION AVAILABLE FOR FUNDING WIND TURBINE DEMONSTRATION
PROJECTS IN EXPANDED WIND REGIMES**

This Project Opportunity Notice (PON) announces the California Energy Commission's new grant solicitation through its Public Interest Energy Research (PIER) Program focused on demonstration of new wind turbine technologies. This targeted solicitation supports the demonstration of prototype and new turbine technologies useful for expanding wind generation into low wind speed resource areas (Class 3 at 10m). Concurrently, the project will require that a viable Intermittency Management Capability (IMC) be identified and demonstrated to "firm" intermittent wind resources and maximize the value of wind generated resources at the demonstration site. Up to \$5 million is available to support the accelerated development and testing of low wind speed turbine technologies coupled with a "firm" capability to manage the intermittency of wind generation. This is a highly targeted, performance-based solicitation in wind energy and only those candidates who meet the eligibility and scoring criteria as described in the Application Manual will be considered for grant awards.

The PIER Program, administered by the California Energy Commission, funds selected public interest energy RD&D efforts that will advance energy science or technology that are not adequately addressed by the competitive and regulated energy markets. PIER's mission is to conduct public interest energy RD&D that improves the quality of life for Californians by providing environmentally sound, safe, reliable and affordable energy services and products. Detailed information about the PIER program can be found on the Energy Commission Website, at: <http://www.energy.ca.gov/research>. The Energy Commission PIER Research and Development Wind Energy Resource Team invites interested parties to attend a pre-proposal meeting. The meeting is anticipated to be held on:

Thursday, August 12, 2004

1:00 p.m. – 3:30 p.m.

California Energy Commission

1516 Ninth Street

Sacramento, California

Hearing Room B

(Wheelchair accessible)

Background

Though California is recognized as the industry leader for total installed wind capacity at over 1800 MW, the state ranks only 17th in terms of available high wind resource areas (Class 5 and above). Upon reviewing the most recent high-resolution resource maps for the state, it is evident that there are significantly more low wind speed resource areas (Class 3-4 at 10m) than high wind resource areas (Class 5-6, 10m). The low wind resource areas are also in closer proximity to cities where electricity demand is high and where transmission infrastructure readily exists.

The Energy Commission's PIER Research & Development Wind Resource Team supports U.S. Department of Energy's (DOE) 2nd phase of the national Low Wind Speed Technology (LWST) program and is targeting this grant solicitation to expedite some of the concepts into practice. The DOE LWST program research targets focus on reducing the cost of electricity of large wind systems in Class 4 winds to 3 cents/kWh for onshore systems and 5 cents/kWh for offshore systems by 2012. The Energy Commission's PIER Research & Development Wind Resource Team encourages both the 1) development and demonstration of new low wind speed turbine technologies for promoting economic expansion of wind energy resources (Class 3 at 10m) and 2) strategic integration of intermittent wind generated electricity within the state to firm generation and meet Renewable Portfolio Standard (RPS) goals.

The Energy Commission project identifies intermittency integration capability as an area of needed development. Recognizing the need to better integrate wind resources to meet RPS goals, wind developers and manufacturers are encouraged to work with utility operators on intermittency solutions and to take a more aggressive approach by introducing and demonstrating an Intermittency Management Capability (IMC) tailored to the wind facility site and local area electricity demand needs. The goal of the IMC is to use other technologies (storage, hybrid generation, purchase power, and other concepts) to help smooth out the intermittency and "firm" wind generation resources during high demand hours.

The grant builds upon previous wind turbine programs by supporting necessary component development toward a full-scale prototype demonstration at a California test site. Examples of eligible low wind speed technology improvements include those identified under DOE's LWST program as well as other concepts:

- Advanced turbine rotor concepts including larger diameters to harvest the lower-energy winds from a larger inflow area without increasing the cost of the rotor.
- Taller towers in order to take advantage of the increasing wind speed at greater heights.
- More efficient generation equipment and power electronics to accommodate sustained light wind operation at lower power levels without increasing electrical system costs.

Who may apply?

This is a targeted solicitation seeking wind turbine manufacturers and technology developers (Applicants) to be the primary lead for the project. To be eligible, Applicants must present a team with:

1. *A demonstrated commercialization capability (i.e. bringing large complex systems/ products to market);*
- AND
2. *A U.S. base of operation (i.e. manufacturing facility for major components, subassemblies in the U.S. or satellite R&D office which provides economic interest to the U.S.)*

Previous Energy Commission or DOE grant recipients who have successfully demonstrated expertise and experience with development and testing of full, utility-scale wind generation systems, and comply with the above requirements are also encouraged to apply. Both private and public entities may apply for PIER funds. This solicitation represents a complementary and bridging RD&D effort to the U.S. DOE Low Wind Speed Turbine (LWST) Development Program. Applicants under the LWST who meet the eligibility requirements are encouraged to apply to this solicitation.

It is the responsibility of the Applicant to organize and manage the RD&D team to fulfill the solicitation objectives. A minimum recommended team should include prime movers involved in the following areas:

- Technology development (i.e., wind turbine technologies R&D, intermittency/storage devices R&D, other renewable generation technologies)
- Transmission integration (i.e., utility providers, municipal utilities)
- Intermittency integration (i.e., transmission and interconnection technologists)

Teams of subcontractors may also include any or all of the following: individuals, businesses, land and farm owners, developers, and public or private research institutions and laboratories.

What projects are eligible for funding?

The purpose of this solicitation is to conduct RD&D that will accelerate and expand the development of wind turbine system technologies for lower speed wind regime applications (Class 3 at 10m) and couple the system with generation “firming” capability for integration to electricity systems at a California demonstration site. California has the largest capacity of installed wind capacity in the nation, however many of those areas are in the high wind resource regions and have been developed for several decades. With abundant rural and farm lands located in low wind regimes and urban centers with consistent low winds, development and demonstration of low wind generation resources has the potential to increase wind generation and supplement the state’s already constrained electricity infrastructure. By widely dispersing wind generation facilities throughout the state and advancing an intermittency management capability, these renewable systems will provide end-users new options to improve on-site, local demand of electricity in both grid connected and off-grid configurations with

the biggest benefits, of course obtained through grid-connect systems in both urban and rural areas.

Specific eligibility:

- Find a demonstration site located in a low wind speed site in California and,
- Full turbine system and intermittency management capability demonstration.

How much financial assistance is available?

The total PIER funding for this Solicitation is anticipated to be up to \$5 million. A single proposal may request no more than \$1.75 million in PIER funding and is anticipated to last 2-3 years. The Energy Commission expects to award 1-3 grants. The Energy Commission reserves the right to augment or reduce these amounts during this Solicitation process.

An Applicant may submit only one proposal per project. However, an Applicant may submit multiple proposals if each proposal is for a different project.

Schedule of application, award, and project start dates:

Pre-Proposal Conference California Energy Commission, Hearing Room B, 1516 Ninth St, Sacramento, CA 95814	<i>Estimated</i> August 12, 2004 1:00 p.m. to 3:30 p.m.
Post Question and Answers from Pre-Proposal Conferences (See Energy Commission's Website)	<i>Estimated</i> August 19, 2004
Deadline to Submit Proposals	September 7, 2004 4:00 p.m.
Review Proposals	September 8 – October 8, 2004
Interview Applicants (if necessary)	<i>Estimated</i> October 25 – 28, 2004
Post Notice of Award	<i>Estimated</i> November 12, 2004
Energy Commission Business Meeting	<i>Estimated</i> December 15, 2004

How do I get application materials?

The Energy Commission invites you to contact us regarding this solicitation. This Targeted Solicitation is available on the Energy Commission website:

<http://www.energy.ca.gov/contracts>

Copies may be obtained by writing or calling:

**Research and Development Office
California Energy Commission
1516 Ninth Street, MS-43
Sacramento, California 95814
Telephone: (916) 654-5129
FAX: (916) 653-6010**

If you would like an Application Manual mailed to you, please complete the following form and mail or fax it to the indicated address.

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**TARGETED SOLICITATION FOR
EXPANDED WIND REGIME TURBINE TECHNOLOGY
AND INTERMITTENCY MANAGEMENT CAPABILITY
DEMONSTRATION**

Application Manual Request Form

Yes! Send me a copy of the July 2004 Application Manual.

Please check the **one** category that best characterizes your status:

☐ **Private For-Profit Entity**

☐ **Public**

☐ **Other (Specify)** _____

Name

Title

Company or Organization

Street Address

Mailing Address (if different from street address)

City (please do not abbreviate)

STATE

ZIP

(_____)_____
Telephone Number (include area code)

(_____)_____
Fax Number (include area code)

E-mail Address: _____

Mail or fax to:

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